Case No.: 20954P

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (original): An optionally substituted peptide having the structure:

$$z^{1}$$
- x^{1} - x^{2} - x^{3} - x^{4} - x^{5} - x^{6} - x^{7} - x^{8} - x^{9} - x^{10} - x^{11} - x^{12} - x^{13} - x^{14} - x^{15} - x^{16} - x^{17} - x^{2}

wherein X^1 is an optionally present amino acid that, if present, is either alanine, valine, leucine, isoleucine, proline, tryptophan, phenylalanine, methionine, glycine, serine, threonine, tyrosine, cysteine, asparagine, glutamine, lysine, arginine, histidine, aspartic acid, or glutamic acid, or a derivative thereof;

X² is an optionally present amino acid that, if present, is either alanine, valine, leucine, isoleucine, proline, tryptophan, phenylalanine, methionine, glycine, serine, threonine, tyrosine, cysteine, asparagine, glutamine, lysine, arginine, histidine, aspartic acid, or glutamic acid, or a derivative thereof;

X³ is an optionally present amino acid that, if present, is either alanine, valine, leucine, isoleucine, proline, tryptophan, phenylalanine, methionine, glycine, serine, threonine, tyrosine, cysteine, asparagine, glutamine, lysine, arginine, histidine, aspartic acid, or glutamic acid, or a derivative thereof;

X⁴ is an optionally present amino acid that, if present, is either alanine, valine, leucine, isoleucine, proline, tryptophan, phenylalanine, methionine, glycine, serine, threonine, tyrosine, cysteine, asparagine, glutamine, lysine, arginine, histidine, aspartic acid, glutamic acid, or norleucine, or a derivative thereof;

X⁵ is an optionally present amino acid that, if present, is either alanine, valine, leucine, isoleucine, proline, tryptophan, phenylalanine, methionine, glycine, serine, threonine,

Case No.: 20954P

tyrosine, cysteine, asparagine, glutamine, lysine, arginine, histidine, aspartic acid, or glutamic acid, or a derivative thereof;

X⁶ is either a D-amino acid, 5-guanidinopropionic acid or its lower or higher homolog, or a derivative thereof;

X⁷ is either lysine, cysteine, homocysteine, 3-mercaptopropionic acid or its higher homolog, penicillamine, 2,3 diamino proprionic acid or its higher homolog, or aspartic acid or its higher homolog, or a derivative thereof;

X⁸ is either methionine, norleucine, leucine, isoleucine, valine, methioninesulfoxide, or methioninesulfone, or a derivative thereof;

 X^9 is either leucine, isoleucine, valine, alanine, methionine, or 5-aminopentanoic acid, or a derivative thereof;

X¹⁰ is either asparagine, glutamine, alanine, leucine, isoleucine, valine, norleucine, cyclohexylalanine, phenylalanine, (2')-naphthylalanine, tyrosine, histidine, tryptophan, lysine, serine, threonine, methionine, or citrulline, or a derivative thereof;

X¹¹ is either arginine, lysine, citrulline, histidine, homoarginine, norarginine, or nitroarginine, or a derivative thereof;

X¹² is either valine, leucine, isoleucine, alanine, or methionine, or a derivative thereof;

X¹³ is either phenylalanine, tyrosine, D-(*p*-benzoylphenylalanine), tryptophan, (1')- and (2')-naphthylalanine, cyclohexylalanine, or mono and multi-substituted phenylalanine wherein each substituent is independently selected from the group consisting of O-alkyl, alkyl, OH, NO₂, NH₂, F, I, and Br; or a derivative thereof;

X¹⁴ is either arginine, lysine, histidine, norarginine, homoarginine, nitroarginine, or 5-aminopentanoic acid, or a derivative thereof;

X15 is either proline, alanine, valine, leucine, isoleucine, methionine, sarcosine, or 5-aminopentanoic acid, or a derivative thereof;

X¹⁶ is an optionally present amino acid that if present is either cysteine, homocysteine, cysteamine, penicillamine, 2,3 diamino propionic acid or its higher homolog, or aspartic acid or its higher homolog, or a derivative thereof;

Case No.: 20954P

X¹⁷ is an optionally present amino acid that, if present, is either alanine, valine, leucine, isoleucine, proline, tryptophan, phenylalanine, methionine, glycine, serine, threonine, tyrosine, cysteine, asparagine, glutamine, lysine, arginine, histidine, aspartic acid, or glutamic acid, or a derivative thereof;

 Z^1 is an optionally present protecting group that, if present, is covalently joined to the N-terminal amino group;

Z² is an optionally present protecting group that, if present, is covalently joined to the C-terminal carboxy group;

provided that if X^{16} is present, X^{16} and X^{7} together form a cyclic group from 32 to 36 atoms joined by either a disulfide bond or an amide bond, wherein if X^{7} is either cysteine, homocysteine, 3-mercaptopropionic acid or its higher homolog, or penicillamine, then X^{16} is either cysteine, homocysteine, cysteamine, or penicillamine; if X^{7} is 2,3 diamino proprionic acid or its higher homolog then X^{16} is aspartic acid or its higher homolog, and if X^{7} is aspartic acid or its higher homolog then X^{16} is 2,3 diamino proprionic acid or its higher homolog;

further provided that if X^{16} is not present, then X^{17} is not present, Z^2 is not present, X^7 is lysine, and X^{15} and X^7 together form a cyclic group joined by the X^7 Lys epsilon amino group and the X^{15} carboxyl group;

or a labeled derivative of said peptide;

or a pharmaceutically acceptable salt of said peptide or of said labeled derivative.

Claim 2 (original): The peptide of claim 1, wherein X6 is selected from the group consisting of: D-arginine, D- alanine, D-norleucine, D-α-aminobutyric acid, D-valine, D-leucine, D-isoleucine, D- proline, D-methionine, D- phenylalanine, D- asparagine, D-glutamine, D-serine, D-threonine, D- glutamic acid, D-aspartic acid, D-lysine, D-histidine, D-tryptophan, D-tyrosine, D-cyclohexylalanine, D-(2')naphthylalanine, D-ornithine, D-homoarginine, D-norarginine, D-citrulline and 5-guanidinopropionic acid.

Claim 3 (original): The peptide of claim 2, wherein X^{10} is either asparagine or glutamine.

Case No.: 20954P

Claim 4 (original): The peptide of claim 3, wherein X^1 , X^2 , X^3 , X^4 , X^5 , X^{16} and X^{17} are not present.

Claim 5 (original): The peptide of claim 3, wherein X¹⁶ is present.

Claim 6 (original): The peptide of claim 5, wherein X^1 , X^2 , X^3 , X^4 , X^5 , are not present and X^{17} is either tyrosine or tryptophan.

Claim 7 (original): The peptide of claim 5, wherein X^1 , X^2 , X^3 , X^4 , X^5 , and X^{17} are not present.

Claim 8 (original): The peptide of claim 6, wherein Z^1 is either not present or is -C(O)CH3 and Z^2 is either not present or is -NH2.

Claim 9 (original): The peptide of claim 7, wherein Z^1 is either not present or is -C(O)CH3 and Z^2 is either not present or is -NH2.

10 (original): The peptide of claim 7, wherein

X8 is either methionine, norleucine, or N-methyl norleucine;

X⁹ is leucine:

X11 is arginine;

X12 is valine;

X¹³ is phenylalanine, (2')napthylalanine, p-fluoro-phenylalanine, tyrosine, or cyclohexylalanine;

X14 is arginine, or alanine;

 X^{15} is either proline or sarcosine; and

X16 is either cysteine, D-cysteine, aspartic acid, or diamino proprionic acid.

Claim 11 (original): The peptide of claim 10, wherein X^6 is either D-arginine, D-alanine, D-norleucine, D-proline, D-phenylalanine, D-asparagine, D-serine, D-glutamic acid, D-lysine, or D-citrulline.

Case No.: 20954P

Claim 12 (original): The peptide of claim 11, wherein either X^7 is 2,3 diamino proprionic acid and X^{16} is aspartic acid; or X^7 is aspartic acid and X^{16} is 2,3 diamino proprionic acid.

Claim 13 (original): The peptide of claim 12, wherein Z^1 is -C(O)CH3 and Z^2 is -NH2.

Claim 14 (original): The peptide of claim 11, wherein X^7 is cysteine and X^{16} is cysteine or D-cysteine.

Claim 15 (original): The peptide of claim 14, wherein Z^1 is -C(O)CH3 and Z^2 is -NH2.

Claim 16 (original): The peptide of claim 15, wherein X^{10} is glutamine.

Claim 17 (original): The peptide of claim 1, wherein said peptide consists of a sequence selected from the group consisting of: SEQ ID NOs: 29, 30, 31, 32, 33, and 34.

Claim 18 (original): The peptide of claim 17, wherein said peptide consists of SEQ ID NO: 30.

Claim 19 (currently amended): A method of screening for a compound able to bind MCH-1R comprising the step of measuring the ability of said compound to affect binding of the peptide of any one of claims 1–18 claim 1 to MCH-1R.

Claim 20 (original): The method of claim 19, wherein said peptide is radiolabeled.

Claim 21 (currently amended): A method of selectively producing MCH-1R activity comprising the step of providing a cell functionally expressing MCH-1R with the peptide of any one of claim 1-18 claim 1.

Claim 22 (cancelled):

Case No.: 20954P

Claim 23 (currently amended): A method of screening for a MCH-1R antagonist comprising the steps of:

- a) combining together a MCH-1R or a functional derivative thereof, a test compound, and the compound of any one of claims 1-18- claim 1,
- b) measuring the ability of said test compound to inhibit an MCH-1R activity as an indication of the ability of said test compound to act as said MCH-1R antagonist.

Claim 24 (cancelled):

Claim 25 (original): The method of claim 23, wherein said functional MCH-1R is a human MCH-1R.

Claim 26 (currently amended): A method for increasing weight in a subject having an MCH-1R comprising the step of administering to said subject an effective amount of the peptide of any one of claims 1-18 claim 1.

Claim 27 (currently amended): A method for increasing appetite in a subject having an MCH-1R comprising the step of administering to said subject an effective amount of the peptide of any one of claims 1-18 claim 1.

Claim 28 (currently amended): A method for measuring the ability of a compound to decrease weight or appetite in a subject having an MCH-1R comprising the steps of:

- a) administering to said subject an effective amount of the peptide of <u>claim 1</u> any one of claims 1-18 to produce a weight increase or appetite increase,
 - b) administering said compound to said subject, and
 - c) measuring the change in weight or appetite of said subject.